What is Claimed is:

1. A method for the conversion of a hydrocarbon-bearing feedstock to a gas product containing methane, comprising contacting said hydrocarbon-bearing feedstock with a hydrogen-containing gas comprising at least about 40 weight percent H_2 at a reaction temperature of at least about 600°C for a time sufficient to convert at least about 90 weight percent of the hydrocarbons in the feedstock to methane.

2. A method as recited in Claim 1, wherein said hydrocarbon-bearing feedstock comprises municipal waste.

3. A method as recited in Claim 1, wherein said hydrocarbon-bearing feedstock comprises separated municipal waste having not greater than about 5 weight percent cellulose-based materials.

4. A method as recited in Claim 1, wherein said hydrocarbon-bearing feedstock comprises automobile shredder refuse.

5. A method as recited in Claim 1, wherein said hydrocarbon-bearing feedstock comprises coal.

6. A method as recited in Claim 1, wherein said hydrocarbon-bearing feedstock comprises tar sand.

7. A method as recited in Claim 1, wherein said hydrocarbon-bearing feedstock comprises crude oil.

8. A method as recited in Claim 1, wherein said hydrogen-containing gas comprises at least about 99 weight percent H_2.

9. A method as recited in Claim 1, wherein said hydrogen-containing gas is formed by the reduction of steam with a metal.

10. A method as recited in Claim 1, wherein said hydrogen-containing gas comprises H_2 and CO.

11. A method as recited in Claim 1, wherein said hydrogen-containing gas is formed by partial oxidation of carbon.

12. A method as recited in Claim 1, wherein said reaction temperature is from about 700°C to about 900°C.

13. A method as recited in Claim 1, further comprising the step of cycling a portion of said methane to create process heat.

14. A method as recited in Claim 1, further comprising the step of combusting said methane to generate electricity.

15. A method as recited in Claim 1, further comprising the step of combusting said methane in a combined cycle generator to generate electricity.

16. A method as recited in Claim 1, wherein said hydrogen-containing gas comprises at least about 99 weight percent H_2 and further comprising the step of removing a portion of said hydrogen-containing gas and combusting said removed portion with said methane.

17. A method for the conversion of a hydrocarbon-bearing feedstock to a gas product containing methane, comprising the steps of:

a) generating a hydrogen-containing gas by contacting steam with a metal under conditions sufficient to form a hydrogen-containing gas stream and convert said metal to a metal oxide;

b) contacting said hydrocarbon-bearing feedstock with said hydrogen-containing gas at a reaction temperature of at least about 600 °C for a time sufficient to convert at least a portion of said hydrocarbon-bearing feedstock to methane.

18. A method as recited in Claim 17, wherein said metal is iron.

19. A method as recited in Claim 17, wherein said metal is tin.

20. A method as recited in Claim 17, wherein said hydrocarbon-bearing feedstock comprises municipal waste.

21. A method as recited in Claim 17, wherein said hydrocarbon-bearing feedstock comprises automobile shredder refuse.

22. A method as recited in Claim 17, wherein said hydrocarbon-bearing feedstock comprises coal.

23. A method as recited in Claim 17, wherein said contacting step comprises contacting said hydrocarbon-bearing feedstock with said hydrogen containing gas at a pressure of not greater than about 5 psi.

24. A method as recited in Claim 17, wherein said reaction temperature is from about 700°C to about 900°C.

25. A method as recited in Claim 17, further comprising the step of combusting at least a portion of said methane in a combined cycle generator to generate electricity.